

Eliminate Unnecessary Equipment and/or Systems



Partner Reported Opportunities (PROs)
for Reducing Methane Emissions

PRO Fact Sheet No. 901

Applicable sector(s):

☐ Production ☐ Processing ☐ Transmission and Distribution

Partners reporting this PRO: Seventeen partners across all four sectors—BP; Columbia Gas Transmission; Chevron (now ChevronTexaco); ConocoPhillips; El Paso Field Services; El Paso Natural Gas Company; ExxonMobil Production Company; Kerr-McGee Corporation; Koch Gateway Pipeline (now Gulf South Pipeline); Marathon Oil Company; Michigan Consolidated Gas Company; Northern Natural Gas Company; Ocean Energy (now Devon Energy); Pacific Gas & Electric Company; Texaco Exploration and Production (now ChevronTexaco); TotalFinaElf (now TOTAL); Western Gas Resources

Other related PROs: Consolidate Crude Oil Production and Water Storage Tanks, Purge and Retire Low Pressure Gasholders

Compressors/Engines ☐
Dehydrators ☐
Pipelines ☐
Pneumatics/Controls ☐
Tanks ☐
Valves ☐
Wells ☐
Other ☒

Technology/Practice Overview

Description

As operating parameters change over time, partners in all sectors have found that certain pieces of equipment or systems initially crucial to operations have become superfluous or greatly exceed operational demands to the point of inefficiency. Production facilities, for example, are designed to accommodate the maximum expected production rate. As fields mature, pressure decline causes production to decrease, resulting in excess processing capacity, inefficient operation, and unnecessary onsite emissions.

While changing conditions allow partners to eliminate some of the well's initial equipment, they can also necessitate the addition of equipment. For example, as a high-pressure gas well matures, the initial separator and glycol unit would be oversized and require downsizing. At the same time, a compressor, water storage tank, and salt water disposal system might need to be added to continue production. The operator would need to evaluate the remaining gas reserves to justify these additional expenditures.

The more than 17 partners that have reported this PRO found that eliminating or downgrading unnecessary pieces of equipment or systems increased efficiency, lowered operation and maintenance costs, and reduced methane emissions. Equipment eliminated or downgraded included compressors, glycol dehydrators, truck loading sites, heater/treater units, gas-driven water treating flotation cells, and CO₂ membrane units.

Operating Requirements

Eliminating or downgrading unnecessary equipment will not affect operating requirements.

Applicability

This practice applies to facilities, which are operating well below design rates.

Methane Savings: 5 Mcf per year to 130,000 Mcf per year

Costs

Capital Costs (including installation)

☒ <\$1,000 ☐ \$1,000 – \$10,000 ☐ >\$10,000

Operating and Maintenance Costs (annual)

☒ <\$100 ☐ \$100-\$1,000 ☐ >\$1,000

Payback (Years)

☒ 0–1 ☐ 1–3 ☐ 3–10 ☐ >10

Benefits

Reducing methane emissions was an associated benefit of the project.

Methane Emissions Reductions

Reductions will vary according to the type of equipment eliminated, the equipments efficiency/leakage rate, and equipment/facility throughput. Reported reductions ranged between 5 Mcf per year and 130,000 Mcf per year.

Economic Analysis

Basis for Costs and Savings

Methane emissions savings of 5 Mcf per year are associated with the removal of 10 stack pack separators and 3 glycol dehydrators. Methane emissions savings of 130,000 Mcf per year are associated with the elimination of 42 compressors at a processing facility.

Discussion

This practice can have a quick payback. Primary benefits are increased operational efficiency and reduced operation and maintenance costs. Associated benefits are the gas savings from the elimination of unnecessary equipment and improvement in processing efficiency.